IN THE CLAIMS

Cancel claim 20.

Please amend claims 1, 4, 11, 13, 15, 16, 17, 19, and 33–35 to read as follows:

1. (amended) A charging system for a mobile robot comprising the mobile robot that is battery-driven and moves in a self-controlled way within a work space, and a charging station for accommodating the mobile robot for a battery charging operation, the mobile robot being of the four-footed type which quadrupedally walks like a dog and has a power connector on the abdomen of a torso unit thereof, the charging system comprising:

a concave receptacle with a power connector on the inner bottom portion of the receptacle; wherein the receptacle supports the mobile robot in a lying down position;

A1 visible recognition data arranged in a predetermined location of the charging station;

image pickup means mounted on the mobile robot;

calculating means for calculating a range and a bearing from the mobile robot to the charging station, based on an image picked up by the image pickup means; and

searching means for causing the mobile robot to search for the charging station, based on the calculation result provided by the calculating means.

4. (amended) A charging system according to claim 1, wherein the visible recognition data is formed on a print medium, and a plurality of print media is glued onto the A2 surface of a three-dimensional object.

11. (amended) A charging system according to claim 1, wherein at least one of the charging station and the mobile robot comprises an indicator indicating the condition of a battery.

13. (amended) A charging system according to claim 12, wherein the wave transmitted by the transmitter means is easily discriminated and separated from other signals created within the work space.

15. (amended) A charging system according to claim 12, wherein the transmitter means transmits at least two signal waves, from among light ray, infrared ray, sound wave, ultrasonic wave, radio wave, and magnetic field, and the receiver means switches the received signal in response to the range between the charging station and the mobile robot.

16. (amended) A charging system according to claim 12, wherein the transmitter means projects light ray through a slit, and changes the pattern of the slit depending on the direction of light projection.

17. (amended) A charging system according to claim 12, wherein the transmitter means transmits at least two signal waves that are different in output intensity and frequency component.

19. (amended) A charging system according to claim 12, wherein the transmitter means transmits is arranged external to the charging station.

33. (amended) A method for searching for a charging station, based on a signal wave transmitted by a transmitter arranged external to the charging station in a charging system comprising a mobile robot that is battery-driven and moves in a self-controlled way within a work space, and the charging station for accommodating the mobile robot for a battery charging operation, the mobile robot being ambulatory and having at least a torso unit and at least two foot units, comprising an electrode terminal for power feeding, on one of the abdomen of the torso unit and the back of the torso unit, the method comprising the steps of:

teaching the position of the charging station based on the signal wave from the transmitter after the mobile robot has been placed on the charging station, and

searching for the charging station by calculating the range and bearing to the charging station, based on the signal wave from the transmitter, with the mobile robot at any position within the work space.

34. (amended) A method for searching for a charging station, based on a signal wave transmitted by a transmitter arranged external to the charging station in a charging system comprising a mobile robot that is battery-driven and moves in a self-controlled way within a work space, and the charging station for accommodating the mobile robot for a battery charging operation, the mobile robot being ambulatory and having at least a torso unit and at least two foot units, comprising an electrode terminal for power feeding, on one of the abdomen of the torso unit and the back of the torso unit, the method comprising the steps of:

storing beforehand, in a memory of the mobile robot, the position information of the charging station with respect to a reference position set in accordance with the position of the transmitter, and

searching for the charging station by calculating the position of the mobile robot with respect to the reference position, based on the signal wave from the transmitter with the mobile robot at any position within the work space, and reading the position information from the memory to calculate the range and the bearing to the charging station.

35. (amended) A method for searching for a charging station, based on a signal wave transmitted by a transmitter arranged external to the charging station in a charging system comprising a mobile robot that is battery-driven and moves in a self-controlled way within a work space, and the charging station for accommodating the mobile robot for a battery charging operation, the mobile robot being ambulatory and having at least a torso unit and at least two foot units, comprising an electrode terminal for power feeding, on one of the abdomen of the torso unit and the back of the torso unit, the method comprising:

a calculating step in which the mobile robot calculates the position thereof with respect to a reference position set in accordance with the position of the transmitter, based on the signal wave from the transmitter,

in the calculating step the charging station calculates the position thereof with respect to the reference position, based on the signal wave from the transmitter,

a communication step in which the charging station communicates the position information thereof to the mobile robot, and

a searching step in which the mobile robot searches for the charging station by calculating the range and bearing to the charging station through a relative relationship between the position information.